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**NL-3130 AC Vlaardingen(NL)**(54) **Edible spread.**

(57) The present invention concerns the technical field of edible spreads. Consumers have exhibited a preference for fats which are relatively low in saturates, low in trans fatty acids, low in sixteen-carbon fatty acids and contain some polyunsaturated fats. In a known product the fat phase comprises around 80wt% of the product and consists of a blend of around 40wt% olive oil and 60wt% partially hardened olive oil. The invention provides an edible spread comprising from 80-5wt% fat and 95-20wt% of an aqueous phase dispersed in the fat, CHARACTERISED IN THAT;

- a) the oleic acid content of the fat phase is 45-80wt% on fat phase,
- b) the saturated fatty acid content of the fat phase is 5-20wt% on fat phase,
- c) the trans fatty acid content of the fat phase is 0-10wt% on fat phase, and,
- d) the 18-carbon fatty acid content of the fat phase is 70-100wt% on fat phase.

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The present invention concerns the technical field of edible spreads.

The present invention relates particularly to edible water-in-oil emulsions containing relatively high levels of mono-unsaturated fatty acids in the *cis* configuration.

In recent years there has been considerable debate as to the relative nutritional merits of polyunsaturated fats, saturated fats and mono-saturated fats. There has also been debate as to the health effects of low as opposed to high fat diets, vegetable as opposed to animal fats, diets low in mono-unsaturated *trans* fatty acids as opposed to diets rich in mono-unsaturated *cis* fatty acids and the relative merits of diets containing fatty acids of differing chain lengths i.e. the benefits of eighteen-carbon fatty acids as opposed to sixteen carbon fatty acids. Groups of consumers have exhibited a preference for fats which are relatively low in saturates, low in *trans* fatty acids, low in sixteen-carbon fatty acids and which contain some polyunsaturated fats.

A general technical problem which faces spreads manufacturers is that vegetable fats containing polyunsaturated fatty acids, free of *trans* fatty acids and low in saturated fats tend to be liquid at room temperature. The fats employed as structuring agents or 'hardstocks' in spread formulation are generally more saturated, richer in *trans* fatty acids and richer in rather short or long chain fatty acids than the preferred liquid oils. Both the hardstocks and the liquid oils are well known to be generally poor in oleic acid, the mono-*cis*-unsaturated eighteen carbon fatty acid.

A known solution to this problem is the use of olive oil in spread manufacture. Olive oil is particularly rich in mono-unsaturated fatty acids, having a reported content of 65-80% oleic acid. The remaining major components of olive oil are 4-15% linoleic acid and 9-18% saturated fatty acids. Olive oil was until recently the only effective natural source of mono-unsaturated *cis* fatty acids. However, progress in plant breeding has provided sunflower and other vegetable oils with a relatively high mono-unsaturate content.

Manufacture of olive oil for human or animal consumption requires nothing other than expression of the oil from the oil bearing materials and clarification of the oil by filtration. Such a process commonly includes so called cold-pressing and the product is referred to as 'virgin olive oil'. Commercial olive oil is often a blend of olive oils from a number of different sources, some or much of which may be refined olive oil. Legal definitions of what can and cannot be described as 'olive oil' are extant in many legal systems. Blends of around 10-20%wt virgin olive oil and around 80-90% refined olive oil are available in the marketplace as 'olive oil'. For the purposes of this specification the term 'olive oil' means either 'virgin' or refined olive oil. Olive oil is further described in BAILEY ("Industrial Oil and Fat Products": Wiley, Fourth Edition, Volume 1 page 368ff).

Prior use of olive oil as a component of edible spreads has been limited by the high cost of olive oil, although in some olive oil producing countries spreads based on or containing olive oil are known. One such spread has been sold in Greece under the brand-name 'Brio'. In this spread the fat phase comprises around 80wt% of the product and consists of a blend of around 40wt% olive oil and 60wt% partially hardened olive oil. This known spread is rich in mono-*cis* eighteen-carbon fatty acid but relatively low in poly-unsaturated fats, although the product is low in rather short and rather long chain fatty acids.

Other known uses of olive oil in spreads have included use as a flavouring component rather than a nutritional component. Such use has occurred in a product sold under the brand name 'Flora' in Spain. This known spread has comprised 80%wt of a fat phase consisting of around 2% olive oil, 58% of a vegetable oil rich in polyunsaturated fatty acids (such as sunflower oil, maize oil and blends of the same) and 40% of a partially hardened vegetable oil (such as soybean oil).

As well as considering the cost of raw materials and health or nutritional matters, spread manufacturers are required to consider the organoleptic properties of their products. The interaction of the various fats present in a spread is not fully understood and some combinations of fats may give rise to so-called 'crystallisation defects' by which the organoleptic properties of the spread are deleteriously modified. As a consequence, yet another complication is added to the difficult technical problem of fat phase formulation.

We have now determined a formulation for an acceptable spread of which a major fat component is olive oil.

Accordingly, the present invention provides an edible spread comprising from 80-5wt% fat and 95-20wt% of an aqueous phase dispersed in the fat, CHARACTERISED IN THAT;

- a) the oleic acid content of the fat phase is 45-80wt% on fat phase,
- b) the saturated fatty acid content of the fat phase is 5-20wt% on fat phase,
- c) the *trans* fatty acid content of the fat phase is 0-10wt% on fat phase, and,
- d) the 18-carbon fatty acid content of the fat phase is 70-100wt% on fat phase.

Typically, the fat level is 55-65% on product. Products comprising around 60% fat are suitable for use as spreads for frying, cooking and baking purposes.

Preferably, no 4-14 carbon or 20-24 carbon fatty acid is present at a level of above 1wt% on fat phase.

In order that the present invention may be further understood it is described below with reference to a specific example.

A spread was prepared by conventional spread processing techniques with the following composition:

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**Oil Phase: (60 wt% on product)**

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Olive Oil	40wt% on fat
Rapeseed Oil	20wt% on fat
Soybean Oil	20wt% on fat
Hydrog. Soybean Oil	20wt% on fat

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**Aq. Phase: (40 wt% on product)**

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Spray Dried Milk Powder	1% on product
Salt (NaCl)	0.9% on product
Sorbic acid	0.12% on product
Lactic acid	0.04% on product
Monoglyceride	0.08% on product
Lecithin	0.08% on product
$\beta$ -Carotene	trace
Flavour	trace
Vitamine A	trace
Vitamine D	trace
Balance water	

25 The N-line of the fat phase is given below, as measured by NMR at the indicated temperature:

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10°C	15-20
20°C	8-11
30°C	2-4
35°C	0-2

Gas-liquid chromatographic analysis of the fat phase revealed the following fatty acid spectrum:

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C12:0	0.14%
C14:0	0.35%
C16:0	11.39% {palmitic}
C16:1	0.56%
C18:0	6.36% {stearic}
C18:1	55.52% {oleic}
C18:2	18.76% {linoleic}
C18:3	3.52%
C20:1	0.19%
C22:0	0.45%

**Claims**

- 50 1. An edible spread comprising from 80-5wt% fat and 95-20wt% of an aqueous phase dispersed in the fat, CHARACTERISED IN THAT;
- a) the oleic acid content of the fat phase is 45-80wt% on fat phase,
  - b) the saturated fatty acid content of the fat phase is 5-20wt% on fat phase,
  - c) the trans fatty acid content of the fat phase is 0-10wt% on fat phase, and,
  - 55 d) the 18-carbon fatty acid content of the fat phase is 70-100wt% on fat phase.
2. Spread according to claim 1 wherein the fat level is 55-65% on product.

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3. Spread according to claim 1 or 2 comprising no 4-14 carbon or 20-24 carbon fatty acid is present at a level of above 1wt% on fat phase.

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## EUROPEAN SEARCH REPORT

Application Number

EP 92 20 0134

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
P,X	EP-A-0 445 849 (UNILEVER NV) * page 3, line 53 - line 57; claims 1,3-5,10,12 * ---	1	A2307/00
P,X	GB-A-2 244 717 (CHARLEVILLE RESEARCH LIMITED) * claims 1,2,5,28-30; example 5 * ---	1,2	
P,X	FR-A-2 660 160 (SARL CEMA) * page 6, line 13 - line 18; claims 1,2 * ---	1,2	
Y	US-A-2 814 633 (C.M. GOODING) * column 3, line 39 - line 51; claims 1,4; example 1 * * column 2, line 66 - line 69 * ---	1,3	
Y	EP-A-0 369 519 (UNILEVER NV) * page 3, line 26 - line 30; claims 3,7,8,10; examples 1,2 * ---	1,3	
Y	EP-A-0 121 948 (UNILEVER PLC) * page 6, line 10 - line 21; claims 1,14; example 8 * ---	1,3	TECHNICAL FIELDS SEARCHED (Int. Cl.5)
A	EP-A-0 398 409 (UNILEVER NV) * claims 1,4; examples 1-5 * ---	1-3	A23D
A	US-A-4 533 561 (J. WARD) * column 4, line 26 - line 32; claims 1,7,11,13,21; example 1 * ---	1,2	
A	EP-A-0 304 115 (UNILEVER NV) * page 2, line 55 - page 3, line 3; claims 1,4,5,8 * -----	1	
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 28 APRIL 1992	Examiner KANBIER D.T.
<b>CATEGORY OF CITED DOCUMENTS</b>			
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons ----- @ : member of the same patent family, corresponding document	